

JUL 28 1965

Thomas J. Watson
Research Center
July 22, 1965

Memorandum to: E. A. Barber
J.C.R. Licklider

Subject: Trip Report

On July 19, 1965, I spent about two hours in the office of Professor Joshua Lederberg, discussing various proposals for the development of an automated planetary laboratory. My purpose in visiting him was to get advice on the biological experiments to be performed via the space vehicles NASA plans to land on Mars during the period 1969 to 1973.

Professor Lederberg strongly opposes landing anything on Mars during that period at all. He proposes, instead, that Mars be observed during that period via orbiting laboratories, and that meanwhile we work toward the goal of landing a much more powerful and flexible laboratory which would (1) minimize the spectrum of situations in which we would fail to detect life, and which would (2) tell us as much as possible about any life found before contamination affects the findings.

The proposed development of this laboratory has three phases: first, an automated laboratory is to be developed for the study of terrestrial biology; secondly, the principles learned through the use of the first system are to determine the form of a prototype for the Mars mission; finally, experience gained by testing the prototype is to lead to the actual payload to be landed on Mars.

Specifically, Professor Lederberg suggested that a corporation such as IBM collaborate in this program with his group at Stanford. He estimates that one or two competent systems engineers, after working with his group for half a year, could write a technical proposal to NASA that had a reasonable probability of being accepted. He estimates that the first phase itself would require the talents of 10 to 20 engineers and a million dollars (within a factor of three) per year for two years. (The earliest reasonable estimate for the actual landing of the laboratory on Mars is 1975.) In this program his group would take complete responsibility for the biological aspects of the project and for communication between the biologists and the engineers.

①
i.e. phase zero.

E. A. Barber
J.C.R. Licklider

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In case present plans to land a modest laboratory on Mars during the period 1969 to 1973 are carried out in spite of the drawbacks, the experiments to be performed will not require a computer, as they are already automated. Nevertheless, Professor Lederberg agreed that inclusion of a computer in the payload would substantially reduce the data load, and he felt that the flexibility of computer control over the experiments too might significantly increase their effectiveness. In particular, the experiments could be controlled by different subroutines programmed in the remote computer and called from Earth on the basis of computer analysis of the data there. He estimated that he could tell an engineer in a day or two all that he would need to know about the experiments in order to write a technical proposal for development of such a computer. Because of his special familiarity with computers, Professor Lederberg believes that he can give better information on computer control and analysis of the proposed experiments than can many of the originators of the experiments themselves. (A)

Professor Lederberg has repeatedly refused to accept money in any amount and for any purpose in return for the information above, giving the following reasons:

1. He does not wish to prejudice his position in giving advice to NASA on future contract proposals by IBM.
2. He is against the principle of his accepting fees that ultimately are charged to NASA anyway.
3. He does not wish to enter into a relationship with IBM as its employee.

He has, however, indicated a willingness to sign an agreement with respect to confidential information, and related rights to make us of such information, that is strictly reciprocal.



W. L. Makous

WM:dc
R. W. DeSio
H. A. Ernst
J. Griffith
S. P. Keller
J. Lederberg (2)
P. K. Spatz
G. L. Tucker (2)